

- (b) forming a first layer of the first solution or dispersion on a substrate;
- (c) converting the first platinum component in the resulting first layer to a water-insoluble form;
- (d) combining a water-soluble or dispersible SO<sub>x</sub> sorbent component, wherein the SO<sub>x</sub> sorbent component is selected from the group consisting of MgAl<sub>2</sub>O<sub>4</sub>, MnO, MnO<sub>2</sub>, and Li<sub>2</sub>O, and a finely divided, high surface area refractory oxide with an aqueous liquid to form a second solution or dispersion which is sufficiently dry to absorb essentially all of the liquid;
- (e) forming a second layer of the second solution or dispersion on the first layer; and
- (f) converting the second platinum component in the resulting second layer to a water-insoluble form.

Kindly delete claims 5, 7, 8, 39, 40, and 41.

## **REMARKS**

Claims 1, 2, 5, 7, 8, 9, 20, 21, 29, 34, 39-42, 48, 60, 62, 63, 106, and 109 of the subject application are pending. Applicant has amended claims 1, 9, 34, 42, 106, and 109 in order more particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has not added any claims and has deleted claims 5, 7, 8, 39, 40, and 41. Accordingly, claims 1, 2, 9, 20, 21, 29, 34, 42, 48, 60, 62, 63, 106, and 109 are presently being examined.

In view of the following Amendment and Response, applicant respectfully requests that the Examiner reconsider and withdraw the rejections made in the outstanding Office Action.

### **Support for the Amendments**

Applicant has amended claims 1, 9, 34, 42, 106, and 109 in order more particularly point out and distinctly claim the subject matter of applicant's layered catalyst composite comprising a first layer and a second layer. Specifically, applicant has amended claims 1, 34, 106, and 109 to delete "a SO<sub>x</sub> sorbent component having a free energy of formation from about 0 to about -90 Kcal/mole at 350°C." and substituted therefore "wherein the SO<sub>x</sub> sorbent component is selected from the group consisting of MgAl<sub>2</sub>O<sub>4</sub>, MnO, MnO<sub>2</sub>, and Li<sub>2</sub>O." This amendment is supported at, for example, now deleted claim 8. Applicant has also amended claims 9 and 42 to delete "wherein the SO<sub>x</sub> sorbent component is MgO or Li<sub>2</sub>O and substitute therefore "wherein the SO<sub>x</sub> sorbent component is Li<sub>2</sub>O." Applicant has entered these amendments in order to overcome the Examiner's rejections.

These amendments to the claims are fully supported in the specification as originally filed, and thus no new matter is introduced by these amendments in accord with 35 U.S.C. Section 132. Accordingly, applicant requests entry of these amendments.

### **Election/Restrictions**

The Examiner has required Restriction to one of the following inventions under 35 U.S.C. Section 121:

I. Claims 1-73 and 106-118 (group I), drawn to a catalyst and method for making the same, classified in class 502, subclass 325+.

II. Claims 74-105 (group II), drawn to a method, classified in class 423, subclass 213.2+.

The Examiner states that the inventions are distinct, each from the other, because the inventions set forth in claims 1-73 and 106-118 (group I) and claims 74-105 (group II) are related as product and process of use. The Examiner argues that the inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. The Examiner states that in the present case the product can be used for another and materially different process, such as a method for removing hydrogen sulfide out of a gas. The Examiner concludes that because these inventions are distinct for the reasons given above and the inventions set forth in groups I and II have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation between the Examiner and Richard Negin, applicant's attorney, on Nov. 1, 2002, a provisional election was made with traverse to prosecute the invention of the catalyst and method for making the same, claims 1-73 and 106-118 (group I). Applicant hereby affirms this election in this reply to this Office Action. The Examiner has withdrawn claims 74-105 (group II) from further consideration as being drawn to a non-elected invention.

## **Specification**

The Examiner states that on page 6, line. 28 in the specification, "JP" is misspelled. Applicant's specification as amended obviates the Examiner's objections.

As set out above, applicant has amended the specification to delete "JO1210032" and substitute therefore "JP1210032".

The Examiner has also objected to the Abstract on the basis that it does not provide any examples of the "sulfur oxide absorbing layer", "nitrogen oxide absorbing layer", or the "SO<sub>x</sub> sorbent component". Applicant traverses the Examiner's objection, in part, and applicant's claims as amended obviate the Examiner's to the Abstract, in part.

Applicant's invention as recited in amended claim 1 provides a layered catalyst composite comprising a first layer and a second layer. The first layer comprises a first support and a first platinum component; and (b) the second layer comprises a second support and a SO<sub>x</sub> sorbent component, wherein the SO<sub>x</sub> sorbent component is selected from the group consisting of MgAl<sub>2</sub>O<sub>4</sub>, MnO, MnO<sub>2</sub>, and Li<sub>2</sub>O. Applicant does not recite a "sulfur oxide absorbing layer" or a "nitrogen oxide absorbing layer". In the amended Abstract, applicant does recite that the "SO<sub>x</sub> sorbent component" is selected from the group consisting of MgAl<sub>2</sub>O<sub>4</sub>, MnO, MnO<sub>2</sub>, and Li<sub>2</sub>O.

Accordingly, the Examiner's objections to the specification and Abstract should be withdrawn.

**Rejection of Claim 109 under 35 U.S.C. Section 112, second paragraph.**

The Examiner has rejected claim 109 under 35 U.S.C. Section 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner states that the terms "finely divided" and "high surface area" in claim 109 are relative terms which render the claim indefinite and the specification does not provide a

standard for ascertaining the requisite degree. Applicant traverses the Examiner's rejections.

Applicant has defined the meaning of "finely divided" and "high surface area" in the specification. For example, applicant has stated the following:

High surface refractory metal oxides are often employed as a support for many of the catalytic components. For example, high surface area alumina materials, also referred to as "gamma alumina" or "activated alumina" typically exhibit a BET (Brunauer, Emmett, and Teller) surface area in excess of 60 square meters per gram ("m<sup>2</sup>/g"), and often up to about 200 m<sup>2</sup>/g or more. Such activated alumina is usually a mixture of the gamma and delta phases of alumina, but may also contain substantial amounts of eta, kappa and theta alumina phases. Refractory metal oxides other than activated alumina may be utilized as a support for at least some of the catalytic components in a given catalyst. For example, bulk ceria, zirconia, alpha alumina and other materials are known for such use. Although many of these materials have a lower BET surface area than activated alumina, that disadvantage tends to be offset by the greater durability of the resulting catalyst. (applicant's specification at page 3, lines 5-16)

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The first layer composition and second layer composition respectively comprise a first support and a second support which can be the same or different components. The support is made of a high surface area refractory oxide support. Useful high surface area supports include one or more refractory oxides. These oxides include, for example, silica and metal oxides such as alumina, including mixed oxide forms such as silica-alumina, aluminosilicates which may be amorphous or crystalline, alumina-zirconia, alumina-chromia, alumina-ceria and the like. The support is substantially comprised of alumina which preferably includes the members of the gamma or activated alumina family, such as gamma and eta aluminas, and, if present, a minor amount of other refractory oxide, e.g., about up to 20 weight percent. Desirably, the

active alumina has a specific surface area of 30 to 300m<sup>2</sup>/g. (applicant's specification at page 38, lines 13-24)

Accordingly, the terms "finely divided" and "high surface area" in claim 109 are not indefinite and do distinctly claim the subject matter which applicant regards as the invention. Hence, the Examiner's rejection of claim 109 under 35 U.S.C. Section 112, second paragraph, should be withdrawn.

The language of claim 15 which requires that the bottom camber surface is located below and extends generally parallel with respect to said chord line is neither vague nor indefinite, in our view. It is clear from this language precisely what the appellant intends his claim language to cover: an airfoil body having a bottom surface below and parallel to the chord line, and possessing all the other characteristics recited in claim 15. Like the appellant, we think that this claim language adequately provides notice as to the metes and bounds of claimed protection. *Ex parte Rodgers*, 27 USPQ 2d 1738, 1742-43 (B.P.A.I. 1992).

We find no error in the examiner's conclusion that this situation clearly falls within a long established rule that if a submechanism really performs two independent functions there is no objection to including it twice in a claim under each separate function. *Ex parte Olsson*, 65 USPQ 52, 54 (Pat. Off. Bd. App. 1944).

On examination of the claims, we are convinced that the examiner's holding of indefiniteness as to claim 1 is merely a matter of scope of the claim. This applies to the expression, guides associated with the sides of the diaphragm. This is not believed to be indefinite but merely broad. We find the elements set forth in terms which we regard as clear in meaning but admittedly of relatively broad scope. Since no prior art is relied upon, it is presumed that this scope of claim is and should be allowed as a patentable improvement over the state of the art.

*Ex parte Hendrickson*, 42 USPQ 634, 635 (Pat. Off. Bd. App. 1939).

**Rejection of Claims 1, 2, 5, 7, 8, 9, 20, 21, 29, 34, 39, 40, 41, 42, 48, 106, and 109  
under 35 U.S.C. Section 102(b) as Anticipated by or, in the Alternative, under 35  
U.S.C. Section 103(a) as Obvious over (*Hu et al.*)**

The Examiner has rejected claims 1, 2, 5, 7, 8, 9, 20, 21, 29, 34, 39, 40, 41, 42, 48, 106, and 109 under 35 U.S.C. Section 102(b) as anticipated by or, in the alternative, under 35 U.S.C. Section 103(a) as obvious over United States Patent no. 5,597,771 (*Hu et al.*). The Examiner states that the abstract and claims of *Hu et al.* report a catalyst comprising:

a 1st layer comprising: 0.15 to 2.0 g/in<sup>3</sup> (about 259 to 3,456 g/ft<sup>3</sup>) of a 1st support (which may be silica, alumina or titania: (see claims 2 and 19); 0.003 to 0.6 g/in<sup>3</sup> (about 5.2 to 1,037 g/ft<sup>3</sup>) of a 1st palladium component (see claim 19); at least about 0.05 g/in<sup>3</sup> (86.4 g/ft<sup>3</sup>) of an oxygen storage component (which may be ceria or a praseodymium compound, see claims 7, 8 and 19); (optionally) 0 to 0.065 g/in<sup>3</sup> (0 to 112 g/ft<sup>3</sup>) of another 1st platinum group component (see claim 19); 0.025 to 0.5 g/in<sup>3</sup> (43.2 to 864 g/ft<sup>3</sup>) of a zirconium component (see claim 19), and;

a 2nd layer comprising: 0.15 to 2 g/in<sup>3</sup> (259 to 3,456 g/ft<sup>3</sup>) of a 2nd support (which may be silica, alumina or titania, see claims 2 and 19); 0.003 to 0.6 g/in<sup>3</sup> (5.2 to 1,037 g/ft<sup>3</sup>) of a 2nd palladium component (see claim 19); 0 to 0.065 g/in<sup>3</sup> (0 to 112 g/ft<sup>3</sup>) of a 2nd platinum group metal component (see claim 19); 0.025 to 0.5 g/in<sup>3</sup> (43.2 to 864 g/ft<sup>3</sup>) of a 2nd alkaline earth metal component (which may be a component selected from the group consisting of Mg, Sa, Ca, and St, see claims 13 and 19), which the Examiner states may correspond to the "SO<sub>x</sub> sorbent component" of applicant's claim 1..

In connection with the MgO in applicant's claim 9 and the Mg compound in claim 13 in *Hu et al.*, the Examiner notes that the paragraph bridging pages 26 and 27

in *Hu et al.* states that the alkaline earth metal components are preferably alkaline earth metal oxides; 0.025 to 0.5 g/in<sup>3</sup> (43.2 to 864 g/ft<sup>3</sup>) of a 2nd rare earth metal component selected from lanthanum metal components and neodymium metal components (see claim 19), and 0.025 to 0.5 g/in<sup>3</sup> (43.2 to 864 g/ft<sup>3</sup>) of a zirconium metal component (see claim 19). The Examiner further notes that claim 80 in *Hu et al.* reports that the 1st layer is on a downstream substrate and that the 2nd layer is on an upstream substrate.

The Examiner maintains that the difference between applicant's claims and *Hu et al.* is that applicant's claims 7-9 define the "SOx sorbent" of independent claim 1 as being magnesium or barium oxide, whereas claim 13 in *Hu et al.* recites that alkaline earth metal component may be a component of magnesium or barium and the paragraph bridging pgs. 26 and 27 in *Hu et al.* states that the alkaline earth metal components are preferably alkaline earth metal oxides.

The Examiner concludes that it would have been obvious to use either the magnesium oxide or barium oxide as the "2nd alkaline earth metal component" of *Hu et al.* as the "SOx sorbent component" in applicant's claim 1, because *Hu et al.* states that the alkaline earth metal components are preferably alkaline earth metal oxides. The Examiner further notes that the 2nd alkaline earth metal component (applicant's "SOx sorbent component") will inherently have the same claimed "free energy of formation".

The Examiner further adds that "Example 6" of *Hu et al.* appears to disclose the same method for preparing the catalyst comprising: impregnating alumina powder with a an aqueous solution comprising platinum to form a wash coat slurry; dipping a cordierite monolith into this wash coat slurry; and calcining this dipped, cordierite monolith to produce a 1st coat comprising Pt supported on alumina; impregnating another batch of alumina with an aqueous solution comprising barium oxide to form a

2nd wash coat slurry; dipping the cordierite monolith containing Pt on alumina into this 2nd wash coat slurry; and calcining the resulting monolith to obtain a monolith comprising a 1st layer comprising alumina supporting platinum and a 2nd layer comprising alumina supporting barium oxide, in a manner not distinct from applicants' claims 106 and 109. Applicant's claim as amended obviate the Examiner's rejections.

As set out above, applicant has amended claims 1, 34, 106, and 109 to delete "a SO<sub>x</sub> sorbent component having a free energy of formation from about 0 to about -90 Kcal/mole at 350°C." and substitute therefore "wherein the SO<sub>x</sub> sorbent component is selected from the group consisting of MgAl<sub>2</sub>O<sub>4</sub>, MnO, MnO<sub>2</sub>, and Li<sub>2</sub>O." The references of record do not disclose applicant's layered catalyst composite.

Applicant's invention, as defined in the amended claims, pertains to a layered catalyst composite comprising a first layer and a second layer: (a) the first layer comprising a first support and a first platinum component; and (b) the second layer comprising a second support and a SO<sub>x</sub> sorbent component, wherein the SO<sub>x</sub> sorbent component is selected from the group consisting of MgAl<sub>2</sub>O<sub>4</sub>, MnO, MnO<sub>2</sub>, and Li<sub>2</sub>O.

The present invention relates to a thermally stable, layered catalyst composite of the type generally referred to as a three-way conversion catalyst (TWC). TWC catalysts are polyfunctional because they have the ability to substantially simultaneously catalyze the oxidation of hydrocarbons and carbon monoxide and the reduction of nitrogen oxides. The layered catalyst composites of the present invention have a sulfur oxide absorbing layer before or above a nitrogen oxide absorbing layer. The sulfur oxide absorbing layer selectively and reversibly absorbs sulfur oxides over nitrogen oxides and thereby alleviates sulfur oxide poisoning of the three-way conversion catalyst. Because SO<sub>x</sub> poisoning of the three-way conversion catalysts is minimized, the layered catalyst composites are able to maintain long term activity and effectively

oxidize hydrocarbons and carbon monoxide and reduce nitrogen oxide compounds.  
(applicant's specification at page 13, line 24, to page 14, line 3)

In use, the exhaust gas stream, which is contacted with the layered catalyst composite of the present invention, is alternately adjusted between lean and stoichiometric/rich operating conditions so as to provide alternating lean operating periods and stoichiometric/rich operating periods. The exhaust gas stream being treated may be selectively rendered lean or stoichiometric/rich either by adjusting the air-to-fuel ratio fed to the engine generating the exhaust or by periodically injecting a reductant into the gas stream upstream of the catalyst. For example, the layered catalyst composite of the present invention is well suited to treat the exhaust of engines, including diesel engines, which continuously run lean. In such case, in order to establish a stoichiometric/rich operating period, a suitable reductant, such as fuel, may be periodically sprayed into the exhaust immediately upstream of the catalytic trap of the present invention to provide at least local (at the catalytic trap) stoichiometric/rich conditions at selected intervals. Partial lean-burn engines, such as partial lean-burn gasoline engines, are designed with controls which cause them to operate lean with brief, intermittent rich or stoichiometric conditions. In practice, the SOx sorbent components in the top layer selectively absorb in-coming SOx during a lean mode operation (200°C. to 600°C.) and desorb SOx (regenerate) during a rich mode operation (450°C. to 750°C). When the exhaust gas temperature returns to a lean mode operation (200°C. to 600°C.), the regenerated SOx sorbent components in the top layer can again selectively absorb in-coming SOx. The duration of the lean mode may be controlled so that the SOx trap in the top layer will not be saturated with SOx. For example, a vehicle can run from 5 to 8 hours in a lean mode before a rich mode (60-100 mile/hour running at stoichiometric or L=0.98) is required. The lean duration of the run is inversely proportional to the sulfur content in the fuel. The rich mode is

preferred to be carried out at high-speed fuel-enrichment stage where engine cooling by fuel is a common practice. (applicant's specification at page 14, line 23, to page 15, line 17)

As set out above, the present invention employs a second or top layer of a SO<sub>x</sub> sorbent component which acts as a sulfur oxide absorbing layer to selectively and reversibly absorb sulfur oxides over nitrogen oxides and thereby provide a sulfur guard for the NO<sub>x</sub> trap component/three-way conversion catalyst. The SO<sub>x</sub> sorbent component in the SO<sub>x</sub> absorbing layer is a metal oxide which is less basic than the metal oxide in the NO<sub>x</sub> absorbing layer. The less basic SO<sub>x</sub> sorbent component forms SO<sub>x</sub> complexes (sulfates) that are less stable than the SO<sub>x</sub> complexes formed with the more basic NO<sub>x</sub> trap components. The SO<sub>x</sub> sorbent components of the present invention have a free energy of formation from about 0 to about -90 Kcal/mole at 350°C., preferably from about 0 to about -60 Kcal/mole at 350°C., and more preferably from about -30 to about -55 Kcal/mole at 350°C. The free energy of formation is the free-energy change for a reaction in which a substance in its standard state is formed from its elements in their standard states. The free energy of a system is the internal energy of a system minus the product of its temperature and its entropy, that is  $G = H - TS$ , where G is the Gibbs free energy, H is enthalpy, T is absolute temperature, and S is entropy. Figure 1 shows the free energy of formation in Kcal/mole at 350°C. for a number of metal oxides reacting to form nitrates, sulfates, carbonates, nitrites, and sulfites. In general, metals having a free energy of formation with NO<sub>x</sub> greater than about 0 Kcal/mole at 350°C. (i.e., 10 Kcal/mole) will not readily adsorb NO<sub>x</sub> while metals having a free energy of formation with SO<sub>x</sub> lower than about -90 Kcal/mole at 350°C. (i.e., -100 Kcal/mole) will form very stable sulfate but not readily desorb SO<sub>x</sub>. (applicant's specification at page 16, line 21, to page 17, line 10).

The top layer comprises SO<sub>x</sub> absorbing components which will not substantially absorb NO<sub>x</sub> under the operating conditions, e.g., from about 300°C. to about 600°C. The medium temperature regeneration SO<sub>x</sub> traps selectively absorb SO<sub>x</sub> so that the SO<sub>x</sub> traps will not be saturated with nitrate salts in the lean mode and consequently lose their SO<sub>x</sub>-trap capacity. The SO<sub>x</sub> sorbent component is capable of selectively absorbing SO<sub>x</sub> over NO<sub>x</sub> in a temperature range from about 100°C. to about 600°C. and capable of desorbing SO<sub>x</sub> in a temperature range from about 500°C. to about 700°C. Preferably, the SO<sub>x</sub> sorbent component is capable of selectively absorbing SO<sub>x</sub> over NO<sub>x</sub> in a temperature range from about 150°C. to about 475°C., more preferably in a temperature range from about 200°C. to about 450°C., and most preferably in a temperature range from about 250°C. to about 450°C. Preferably, the SO<sub>x</sub> sorbent component is capable of desorbing SO<sub>x</sub> over NO<sub>x</sub> in a temperature range from about 500°C. to about 700°C., preferably in a temperature range from about 520°C. to about 658°C., more preferably in a temperature range from about 535°C. to about 675°C., and most preferably in a temperature range from about 550°C. to about 650°C. Nonlimiting illustrative examples of SO<sub>x</sub> sorbent components may be selected from the group consisting of oxides and aluminum oxides of lithium, magnesium, calcium, manganese, iron, cobalt, nickel, copper, zinc, and silver. More preferred SO<sub>x</sub> sorbent components may be selected from the group consisting of MgO, MgAl<sub>2</sub>O<sub>4</sub> (or hydrotalcite with MgO/Al<sub>2</sub>O<sub>3</sub> from 9/1 to 1/9), MnO, MnO<sub>2</sub>, and Li<sub>2</sub>O. The most preferred SO<sub>x</sub> sorbent components are MgO and Li<sub>2</sub>O. (applicant's specification at page 17, line 16, to page 18, line 5).

The *Hu et al.* reference discloses the following:

... at least one first alkaline earth metal component and at least one second alkaline earth metal component are derived from a metal selected

from the group consisting of magnesium, barium, calcium and strontium. (*Hu et al.* at claim 13)

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The at least one first and at least one second alkaline earth metal can be selected from the group consisting of magnesium, barium, calcium and strontium, preferably strontium and barium. Most preferably, the first alkaline earth metal component comprises barium oxide and the second alkaline earth metal component comprises strontium oxide. Stabilization means that the conversion efficiency of the catalyst composition of each layer is maintained for longer period of time at elevated temperatures. Stabilized supports such as alumina and catalytic components such as noble metals are more resistant to degradation against high temperature exposure thereby maintaining better overall conversion efficiencies. (*Hu et al.* at paragraph bridging pages 26-27).

As set out above, applicant has amended claims 1, 34, 106, and 109 to delete "a SO<sub>x</sub> sorbent component having a free energy of formation from about 0 to about -90 Kcal/mole at 350°C." and substitute therefore "wherein the SO<sub>x</sub> sorbent component is selected from the group consisting of MgAl<sub>2</sub>O<sub>4</sub>, MnO, MnO<sub>2</sub>, and Li<sub>2</sub>O." The references of record do not disclose applicant's layered catalyst composite. Accordingly, the Examiner's rejection of claims 1, 2, 5, 7, 8, 9, 20, 21, 29, 34, 39, 40, 41, 42, 48, 106, and 109 under 35 U.S.C. Section 102(b) as anticipated by or, in the alternative, under 35 U.S.C. Section 103(a) as obvious over *Hu et al.* should be withdrawn.

Obviousness of a composition or process must be predicated on something more than it would be obvious "to try" the particular component recited in the claims or the possibility it will be considered in the future, having been neglected in the past. *Ex parte Argabright et al.* (POBA 1967) 161 U.S.P.Q. 703. There is usually an element of "obvious to try" in any research endeavor, since such research is not undertaken

with complete blindness but with some semblance of a chance of success. "Obvious to try" is not a valid test of patentability. *In re Mercier* (CCPA 1975) 515 F2d 1161, 185 U.S.P.Q. 774; *Hybritech Inc. v. Monoclonal Antibodies. Inc.* (CAFC 1986) 802 F2d 1367, 231 U.S.P.Q. 81; *Ex parte Old* (BPAI 1985) 229 U.S.P.Q. 196; *In re Geiger* (CAFC 1987) 815 F2d 686, 2 U.S.P.Q.2d 1276. *In re Dow Chemical Co.* (CAFC 1988) F2d, 5 U.S.P.Q.2d 1529. Patentability determinations based on that as a test are contrary to statute. *In re Antonie* (CCPA 1977) 559 F2d 618, 195 U.S.P.Q. 6; *In re Goodwin et al.* (CCPA 1978) 576 F2d 375, 198 U.S.P.Q. 1; *In re Tomlinson et al.* (CCPA 1966) 363 F2d 928, 150 U.S.P.Q. 623. A rejection based on the opinion of the Examiner that it would be "obvious to try the chemical used in the claimed process which imparted novelty to the process does not meet the requirement of the statute (35 U.S.C. 103) that the issue of obviousness be based on the subject matter as a whole. *In re Dien* (CCPA 1967) 371 F2d 886, 152 U.S.P.Q. 550; *In re Wiaains* (CCPA 1968) 397 F2d 356, 158 U.S.P.Q. 199; *In re Yates* (CCPA 1981) 663 F2d 1054, 211 U.S.P.Q. 1149. Arguing that mere routine experimentation was involved overlooks the second sentence of 35 USC 103. *In re Saether* (CCPA 1974) 492 F2d 849, 181 U.S.P.Q. 36. The issue is whether the experimentation is within the teachings of the prior art. *In re Waymouth et al.* (CCPA 1974) 499 F2d 1273, 182 U.S.P.Q. 290. The fact that the prior art does not lead one skilled in the art to expect the process used to produce the claimed product would fail does not establish obviousness. *In re Dow Chem. Co.* (CAFC 1988) 5 U.S.P.Q.2d 1529.

The provisions of Section 103 must be followed realistically to develop the factual background against which the Section 103 determination must be made. It is not proper within the framework of Section 103 to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary for the full appreciation of what such reference fairly suggest to one of

ordinary skill in the art. The references of record fail to teach or suggest appellant's invention as a whole.

**Allowance of Claims 60, 62, and 63**

The Examiner has not rejected claims 60, 62, and 63 either under 35 U.S.C. Section 102(b) or under 35 U.S.C. Section 103(a) on the basis that there is nothing in *Hu et al.* teaching or suggesting that a top layer comprising supported MgAl<sub>2</sub>O<sub>4</sub> be provided over the bottom layer (i.e., the 1st layer) and middle layer (i.e., the 2nd layer).

The Examiner has made of record the following references, as indicative of the state of the art: United States Patent no. 6,432,859 B1, disclosing a layered catalyst; United States Patent no. 6,248,688 B1, disclosing a catalyst containing oxygen storage components; United States Patent no. 6,221,804 B1, disclosing a layered catalyst; United States Patent no. 6,066,587, disclosing a layered catalyst; and United States Patent no. 6,025,297, disclosing a catalyst containing a NO<sub>x</sub> storage member.

The Examiner states that the prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant submits that detailed discussion of these references is not necessary or appropriate at this time because these references are inferior to the specific references discussed above and because the Examiner has not specifically cited these references against any of the claims in this application.

In view of the foregoing Amendment and Response, applicants request reconsideration pursuant to 37 C.F.R. Section 112 and allowance of the claims pending in this application. Applicant requests the Examiner to telephone the undersigned attorney should the Examiner have any questions or comments which might be most

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expeditiously handled by a telephone conference. No fee is deemed necessary in connection with the filing of this Amendment and Response. If any fee is required, however, authorization is hereby given to charge the amount of such fee to Deposit Account No. 18-1843.

In view of the foregoing Amendment and Response, applicant requests reconsideration pursuant to 37 C.F.R. Section 112 and allowance of the claims pending in this application. Applicant requests the Examiner to telephone the undersigned attorney should the Examiner have any questions or comments which might be most expeditiously handled by a telephone conference.

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